

### **AMENDMENTS TO THE CLAIMS**

The following listing of claims will replace all prior versions and listings of claims in the application.

#### **LISTING OF CLAIMS**

1. (currently amended) A compact self-ballasted electrodeless discharge lamp comprising:

a bulb filled with discharge gas containing mercury enclosed in the bulb in the form of mercury element, not in the form of amalgam, and a rare gas;

an excitation coil installed near the bulb;

a ballast circuit which supplies high frequency power to the excitation coil; and

a base that is electrically connected to the ballast circuit,

wherein: the bulb, the excitation coil, the ballast circuit and the base are formed into an integral part;

the bulb has a virtually spherical shape or a virtually ellipsoidal shape;

a recessed portion to which the excitation coil is inserted is formed on the ballast circuit side of the bulb;

the recessed portion has an opening section on the ballast circuit side, and has a tube shape with a virtually round shape in the a cross section thereof, with a portion positioned on the a side opposite to the opening section of the recessed portion being provided with a function for suppressing the convection of the discharge gas;

~~the~~ a largest diameter of the bulb is set in a range from not less than 60 mm to not more than 90 mm;

~~the~~ a bulb wall loading of the bulb during a stable lighting operation is set in a range from not less than  $0.07 \text{ W/cm}^2$  to not more than  $0.11 \text{ W/cm}^2$ ;

~~the~~ a ratio ( $h/D$ ) of ~~the~~ a height ( $h$ ) of the bulb based upon ~~the~~ an end face of the opening section in the recessed portion to the largest diameter ( $D$ ) of the bulb is set in a range from not less than 1.0 to not more than 1.3;

supposing that a distance between a top face of the recessed portion positioned on the side opposite to the opening section of the recessed portion and a top portion of the bulb facing the top face of the recessed portion is  $\Delta h$ , and that a diameter of a portion positioned on the side opposite to the opening section of the recessed portion is  $D_c$ , the following relationship is satisfied:  $\Delta h \leq 1.15 \times D_c + 1.25$  ~~[mm]~~ --mm--;

the excitation coil is constituted by a core and a coil wound around the core; and  
~~the~~ a center portion of ~~the~~ a portion around which the coil is wound in the longitudinal direction of the core is positioned within a range that is apart from ~~the~~ a plane on which the largest diameter of the bulb is located by a distance from not less than 8 mm to not more than 20 mm toward the ballast circuit side.

2. (currently amended) The compact self-ballasted electrodeless discharge lamp of claim 1, wherein the diameter  $D_c$  and the distance  $\Delta h$  satisfy the following relationship:  $\Delta h \geq 1.16 \times D_c - 17.4$  ~~[mm]~~ --mm--.

3. (original) The compact self-ballasted electrodeless discharge lamp of claim 1 or 2, wherein the largest diameter of the bulb is set in a range from not less than 65 to not more than 80 mm.

4. (cancelled)

5. (currently amended) A compact self-ballasted electrodeless discharge lamp comprising:

a bulb filled with discharge gas containing mercury enclosed in the bulb in the form of mercury element, not in the form of amalgam, and a rare gas;

an excitation coil installed near the bulb;

a ballast circuit which supplies high frequency power to the excitation coil; and

a base that is electrically connected to the ballast circuit,

wherein: the bulb, the excitation coil, the ballast circuit and the base are formed into an integral part;

the bulb has a virtually spherical shape or a virtually ellipsoidal shape;

a recessed portion to which the excitation coil is inserted is formed on the ballast circuit side of the bulb;

the recessed portion has an opening section on the ballast circuit side, and has a tube shape with a virtually round shape in ~~the~~ a cross section thereof, with a portion positioned on ~~the~~ a side opposite to the opening section of the recessed portion being provided with a function for suppressing the convection of the discharge gas;

~~the~~ a largest diameter of the bulb is set in a range from not less than 55 mm to not more than 75 mm;

~~the~~ a bulb wall loading of the bulb during a stable lighting operation is set in a range from not less than  $0.05 \text{ W/cm}^2$  to less than  $0.07 \text{ W/cm}^2$ ;

~~the~~ a ratio ( $h/D$ ) of ~~the~~ a height ( $h$ ) of the bulb based upon ~~the~~ an end face of the opening section in the recessed portion to the largest diameter ( $D$ ) of the bulb is set in a range from not less than 1.0 to not more than 1.3;

supposing that a distance between a top face of the recessed portion positioned on ~~the~~ a side opposite to the opening section of the recessed portion and a top portion of the bulb facing the top face of the recessed portion is  $\Delta h$ , and that a diameter of a portion positioned on the side opposite to the opening section of the recessed portion is  $D_c$ , the following relationship is satisfied:  $\Delta h \leq 1.92 \times D_c - 22.4$  [~~mm~~] --mm--;

the excitation coil is constituted by a core and a coil wound around the core; and  
~~the~~ a center portion of ~~the~~ a portion around which the coil is wound in the longitudinal direction of the core is virtually positioned on a plane within which the largest diameter of the bulb is located.

6. (currently amended) The compact self-ballasted electrodeless discharge lamp of claim 5, wherein the diameter  $D_c$  and the distance  $\Delta h$  satisfy the following relationship:  $\Delta h \geq 1.16 \times D_c - 17.4$  [~~mm~~] --mm--.

7. (original) The compact self-ballasted electrodeless discharge lamp of claim 5 or 6, wherein the largest diameter of the bulb is set in a range from not less than 60 mm to not more than 70 mm.

8-9. (cancelled)

10. (currently amended) The compact self-ballasted electrodeless discharge lamp of claims 1 ~~and~~ or 5, wherein the filling pressure of the rare gas is set in a range from not less than 60 Pa to not more than 300 Pa.

11. (currently amended) The compact self-ballasted electrodeless discharge lamp of claims 1 ~~and~~ or 5, wherein a phosphor layer is formed on an inner surface of the bulb.

12. (currently amended) The compact self-ballasted electrodeless discharge lamp of claims 1 ~~and~~ or 5, wherein the diameter  $D_c$  of a portion positioned on the side opposite to the opening section of the recessed portion is greater than the diameter of a portion corresponding to virtually the center portion of the recessed portion in ~~the~~ a longitudinal direction of the excitation coil.

13. (currently amended) An electrodeless-discharge-lamp lighting device comprising:

a bulb which is filled with discharge gas containing mercury enclosed in the bulb in the form of mercury element, not in the form of amalgam, and a rare gas, and which has a recessed portion;

an excitation coil inserted in the recessed portion; and

a ballast circuit which supplies high frequency power to the excitation coil,

wherein: the bulb has a virtually spherical shape or a virtually ellipsoidal shape;

the recessed portion has an opening section on the ballast circuit side, and has a tube shape with a virtually round shape in ~~the~~ a cross section thereof;

~~the~~ a largest diameter of the bulb is set in a range from not less than 60 mm to not more than 90 mm;

~~the~~ a bulb wall loading of the bulb during a stable lighting operation is set in a range from not less than  $0.07 \text{ W/cm}^2$  to not more than  $0.11 \text{ W/cm}^2$ ;

~~the~~ a ratio (h/D) of ~~the~~ a height (h) of the bulb based upon ~~the~~ an end face of the opening section in the recessed portion to the largest diameter (D) of the bulb is set in a range from not less than 1.0 to not more than 1.3;

supposing that a distance between a top face of the recessed portion positioned on ~~the~~ a side opposite to the opening section of the recessed portion and a top portion of the bulb facing ~~the~~ a top face of the recessed portion is  $\Delta h$ , and that a diameter of a portion positioned on ~~the~~ a side opposite to the opening section of the recessed portion is  $D_c$ , the following relationship is satisfied:  $\Delta h \leq 1.15 \times D_c + 1.25$  ~~[mm]~~ --mm--; and

the diameter  $D_c$  of a portion positioned on the side opposite to the opening section of the recessed portion is greater than the diameter of a portion corresponding to virtually

~~the~~ a center portion of the recessed portion in the longitudinal direction of the excitation coil.

14. (currently amended) An electrodeless-discharge-lamp lighting device comprising:

a bulb which is filled with discharge gas containing mercury enclosed in the bulb in the form of mercury element, not in the form of amalgam, and a rare gas, and which has a recessed portion;

an excitation coil inserted in the recessed portion; and

a ballast circuit which supplies high frequency power to the excitation coil,

wherein: the bulb has a virtually spherical shape or a virtually ellipsoidal shape;

the recessed portion has an opening section on the ballast circuit side, and has a virtually cylinder shape with a virtually round tube shape in ~~the~~ a cross section thereof;

~~the~~ a largest diameter of the bulb is set in a range from not less than 55 mm to not more than 75 mm;

~~the~~ a bulb wall loading of the bulb during a stable lighting operation is set in a range from not less than  $0.05 \text{ W/cm}^2$  to less than  $0.07 \text{ W/cm}^2$ ;

~~the~~ a ratio ( $h/D$ ) of ~~the~~ a height ( $h$ ) of the bulb based upon ~~the~~ an end face of the opening section in the recessed portion to the largest diameter ( $D$ ) of the bulb is set in a range from not less than 1.0 to not more than 1.3;

supposing that a distance between a top face of the recessed portion positioned on ~~the~~ a side opposite to the opening section of the recessed portion and a top portion of the

bulb facing ~~the~~a top face of the recessed portion is  $\Delta h$ , and that a diameter of a portion positioned on the side opposite to the opening section of the recessed portion is  $D_c$ , the following relationship is satisfied:  $\Delta h \leq 1.92 \times D_c - 22.4$  ~~{mm}~~--mm--; and

the diameter  $D_c$  of a portion positioned on the side opposite to the opening section of the recessed portion is greater than the diameter of a portion corresponding to virtually ~~the~~a center portion of the recessed portion in the longitudinal direction of the excitation coil.

15. (cancelled)